FM3003 – Calculus III

Dependencies: None

Syllabus:

Plain curves: Conics, parametric equations, polar coordinates and graphs.

Vectors: Vectors in plane and space, Dot and Cross products, Lines, planes and surfaces in space, Cylindrical and Spherical coordinates.

Vector valued functions: Differentiation and integration, Tangent and normal vectors, Arc length and curvature.

Functions of several variables: Graphs of surfaces, Limits and continuity, Partial derivatives and differentiability, linear approximation and error bounds, Chain rule, Directional derivatives and gradients, Tangent planes and normal lines, Extrema of functions of two variables and applications, Lagrange multipliers.

Multiple integration: Iterated integrals, double integrals and volumes, Change of variables and polar coordinates, Surface area, Triple integrals, Change of variables.

Vector analysis: Vector fields, Line integrals, Conservative vector fields, Green’s theorem, Surface integrals, Divergence theorem, Stoke’s theorem.

Assessment: End of semester examination